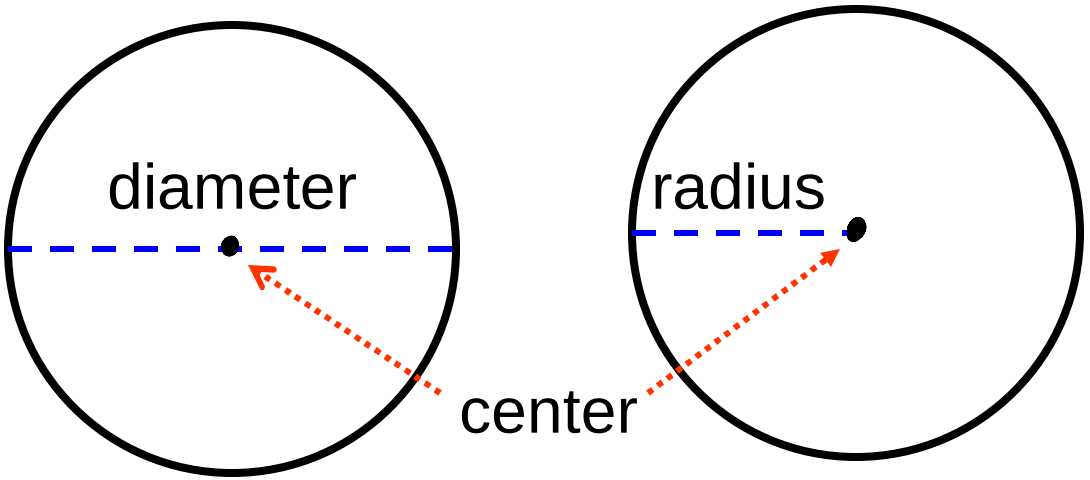
8.3 Circles

1. Write equations of circles
2. Graph circles given the equation.

Circle: a set of all points in a plane that are equidistance from a given point called the ***center***.



Equation of a Circle

The equation of a circle with center (h,k) and radius r units is:

$$(x - h)^2 + (y - k)^2 = r^2$$

Change the signs for h and k

To write an equation of a circle you need to know:

1) center (h,k) (midpoint of the diameter)
2) radius (distance from center to on of the outside points),

then plug those numbers into the equation

Write an equation for a circle with endpoints at (-4,1) and (4, -5).

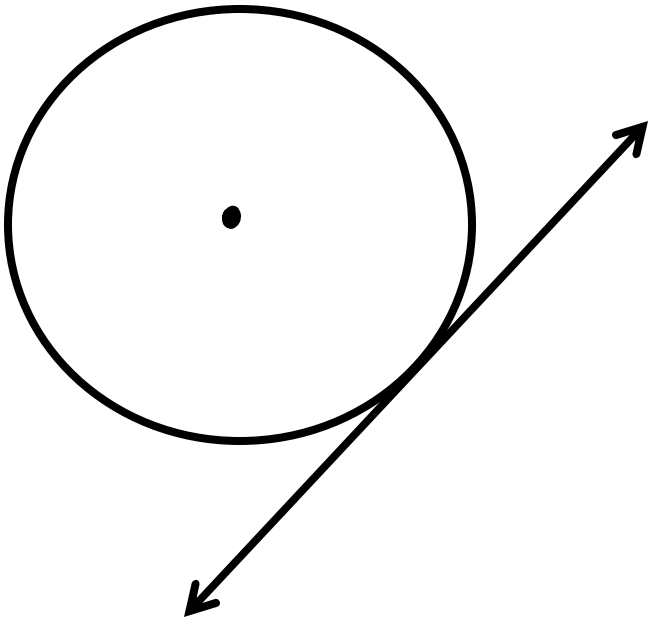
1) Find the Center.
(Midpoint Formula)

2) Find the Radius.

$$\frac{\text{distance formula}}{2}$$

Write the equation:

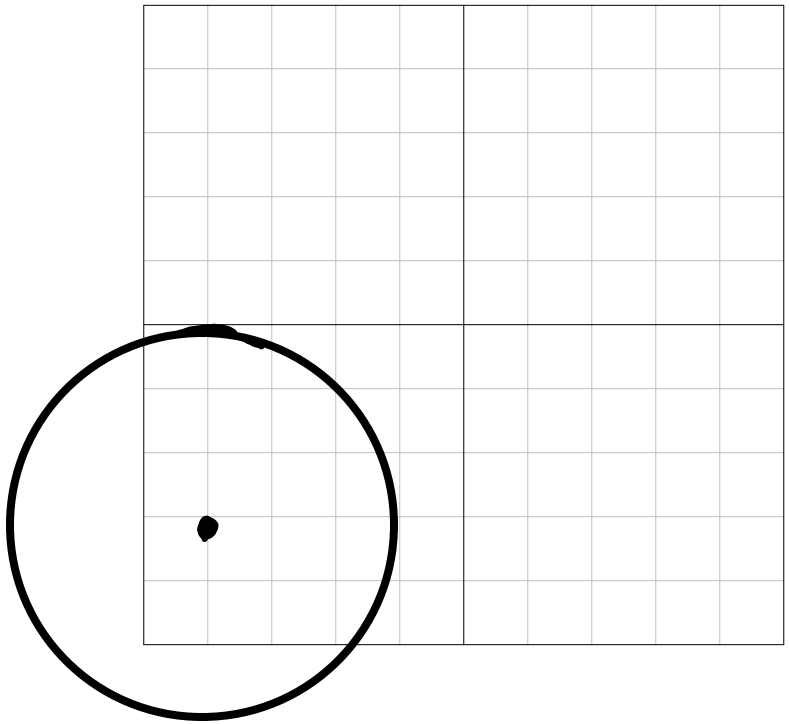
Tangent: a line that intersects a circle in exactly one point. The line and circle are Tangent to each other at that point.



Write an equation for a circle with center (-4,-3) that is tangent to the x-axis.

center:

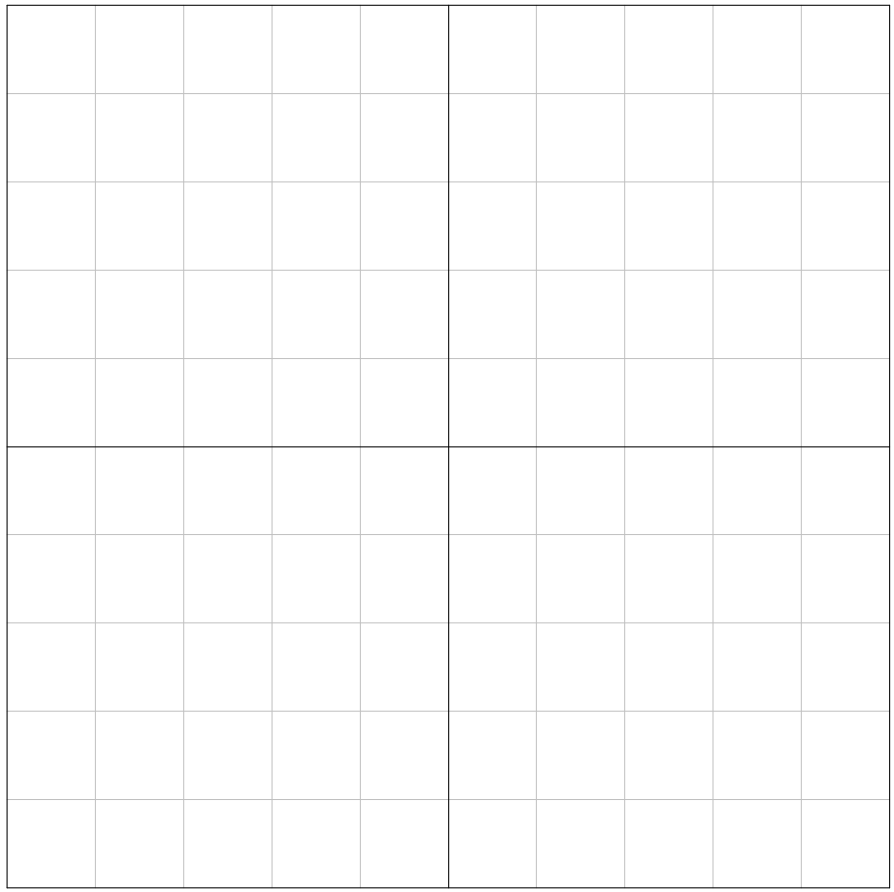
radius:



equation:

Graph an Equation in Standard Form

Graph $(x + 3)^2 + (y - 2)^2 = 9$

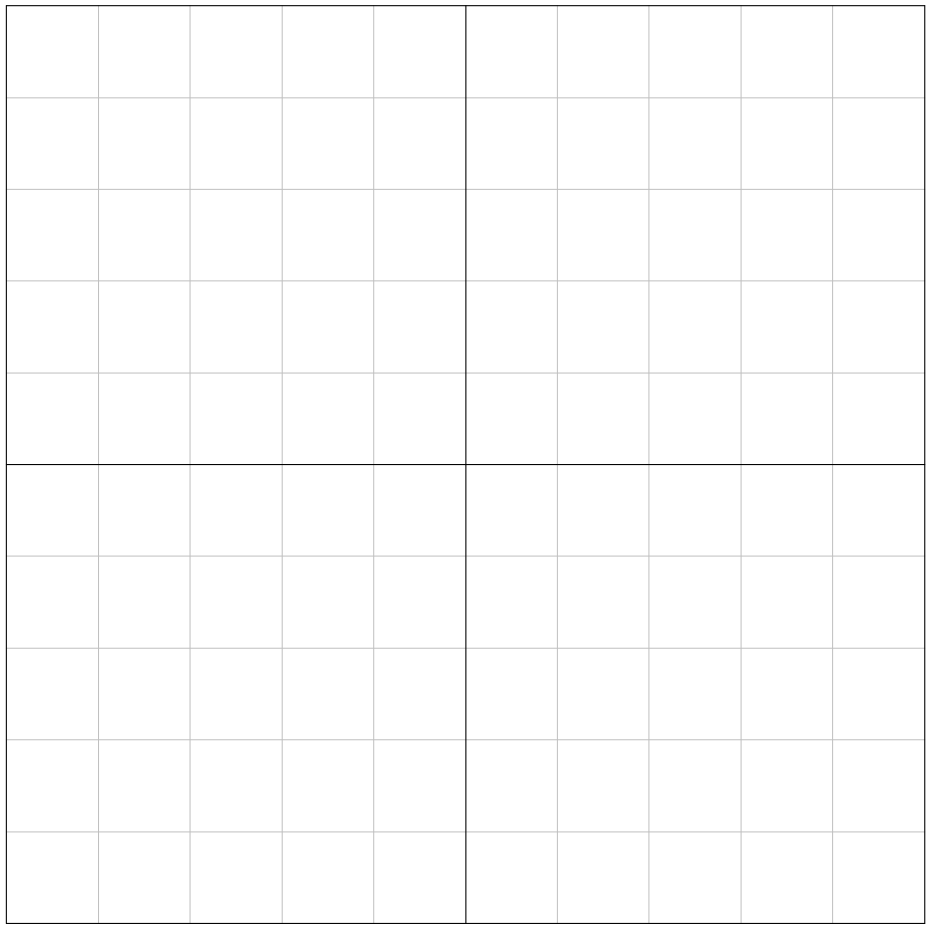


Graph an Equation not in Standard Form

Graph $x^2 + y^2 - 4x + 8y - 5 = 0$

complete the square on both x and y terms!!!

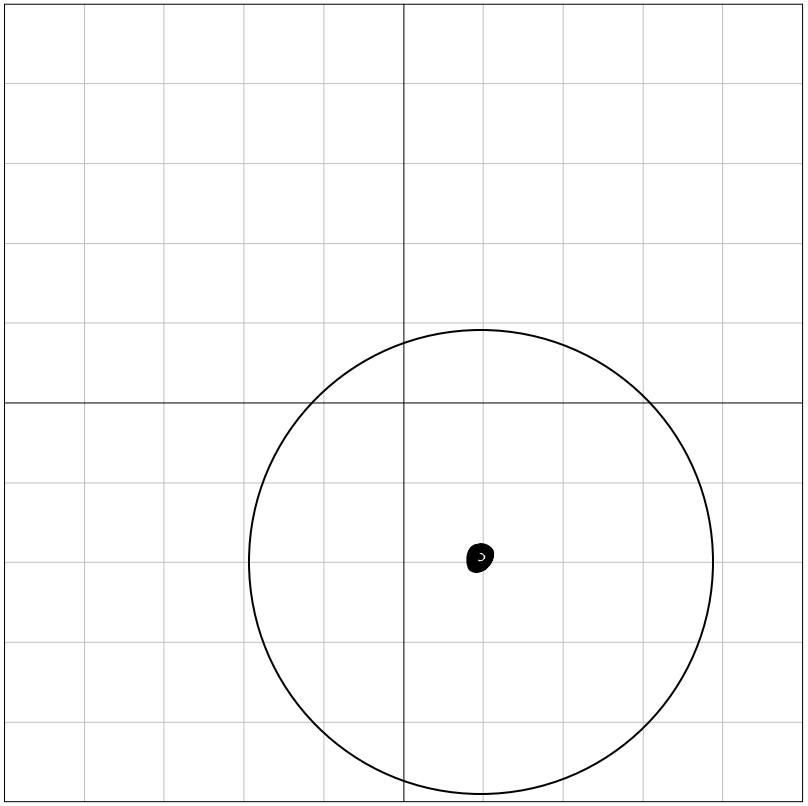
Graph $x^2 + y^2 - 4x + 8y - 5 = 0$



Write an equation for the graph below.

Center:

Radius:



Homework

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